CENTERS FOR DISEASE CONTROL

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

June 14, 1985/Vol. 34/ No. 23

341 ACIP: Smallpox Vaccine
343 Investigation of a Smallpox Rumor — Mexico
344 Legionellosis — Staffordshire, England, and Wayne County, Michigan
350 Observations of Reproductive Functions among Workers in an Oil Refinery — Louisiana
352 Reported Measles Cases — United States, Past 4 Weeks

Recommendation of the Immunization Practices Advisory Committee (ACIP)

Smallpox Vaccine

*These revised ACIP recommendations on smallpox vaccine update the previous recommendations (*MMWR *1980;29:417-20) to include current information on the changes in the International Health Regulations and the ending of distribution of smallpox vaccine to civilians. The basic recommendation is unchanged—smallpox vaccine is* only *indicated for civilians who are laboratory workers occupationally exposed to smallpox or other closely related orthopox viruses.*

SMALLPOX VACCINE

Smallpox vaccine (vaccinia virus) is a highly effective immunizing agent against smallpox. The judicious use of smallpox vaccine has eradicated smallpox. At the World Health Assembly in May 1980, the World Health Organization (WHO) declared the world free of smallpox (*1-4*). Smallpox vaccination of civilians is now indicated *only* for laboratory workers directly involved with smallpox (variola virus) or closely related orthopox viruses (e.g., monkeypox, vaccinia, and others).

SURVEILLANCE OF SUSPECTED CASES OF SMALLPOX

There is no evidence of smallpox transmission anywhere in the world. WHO has coordinated the investigation of 173 rumors of smallpox between 1979 and 1984 (*5-7*). All have been diseases other than smallpox, most commonly chickenpox or other rash illnesses. Even so, a suspected case of smallpox is a public health emergency and must be promptly investigated. Assistance in the clinical evaluation, collection of laboratory specimens, and preliminary laboratory diagnosis is available from state health departments and CDC (telephone: (404) 329-3145 during the day and (404) 329-2888 outside usual working hours).

MISUSE OF SMALLPOX VACCINE

There is no evidence that smallpox vaccination has any value in the treatment or prevention of recurrent herpes simplex infection, warts, or any disease other than those caused by orthopox viruses (*8*). Misuse of smallpox vaccine to treat herpes infections has been associated with severe complications (*9-11*). Smallpox vaccine should never be used therapeutically.

SMALLPOX VACCINATION NOT REQUIRED FOR INTERNATIONAL TRAVEL

Smallpox vaccination is no longer required for international travel. In January 1982, the International Health Regulations were changed deleting smallpox from the Regulations (*12*). The International Certificates of Vaccination no longer include a smallpox vaccination certificate.

SMALLPOX VACCINE NO LONGER AVAILABLE FOR CIVILIANS

In May 1983, the only active, licensed producer of smallpox vaccine in the United States discontinued distribution of smallpox vaccine to civilians (*13*). As a result, smallpox vaccine is no longer available to civilians.

Smallpox Vaccine — Continued

SMALLPOX VACCINE AVAILABLE TO PROTECT AT-RISK LABORATORY WORKERS

CDC provides smallpox vaccine to protect laboratory workers occupationally exposed to smallpox virus and other closely related orthopox viruses (*14*). Vaccine will be provided *only* for the protection of personnel of such laboratories. The vaccine should be administered to eligible employees under the supervision of a physician selected by the laboratory. Vaccine will be shipped to physicians responsible for vaccinating at-risk workers. Requests for vaccine should be sent to:

Drug Immunobiologic and Vaccine Service
Center for Infectious Diseases
Building 1, Room 1259
Centers for Disease Control
Atlanta, Georgia 30333
(404) 329-3356

SMALLPOX VACCINATION OF MILITARY PERSONNEL

U.S. military personnel are routinely vaccinated against smallpox.

CONSULTATION FOR COMPLICATIONS OF SMALLPOX VACCINATION

CDC can assist physicians in the diagnosis and management of patients with suspected complications of smallpox vaccination. Vaccinia immune globulin (VIG) is available when indicated. Physicians should call (404) 329-3145 during the day and (404) 329-2888 evenings and weekends.

The majority of persons with such complications are likely to be recently vaccinated military personnel or their contacts infected through person-to-person spread of vaccinia virus (*15-17*). Such person-to-person spread can be extremely serious if the person infected has eczema or is immunocompromised.

Health-care workers are requested to report complications of smallpox vaccination to CDC through state and local health departments.

References

1. WHO. Smallpox eradication. Weekly Epidemiological Record 1980;55:33-40.
2. WHO. Smallpox eradication. Weekly Epidemiological Record 1980;55:121-8.
3. WHO. Declaration of global eradication of smallpox. Weekly Epidemiological Record 1980;55: 145-52.
4. WHO. Smallpox vaccination policy. Weekly Epidemiological Record 1980;55:153-60.
5. CDC. Investigation of a smallpox rumor—Mexico. MMWR 1985:34;343-4.
6. WHO. Orthopox virus surveillance: post-smallpox eradication policy. Weekly Epidemiological Record 1983;58:149-56.
7. WHO Smallpox Eradication Unit. Personal communication.
8. Kern AB, Schiff BL. Smallpox vaccinations in the management of recurrent herpes simplex: a controlled evaluation. J Invest Dermatol 1959;33:99-102.
9. CDC. Vaccinia necrosum after smallpox vaccination—Michigan. MMWR 1982;31:501-2.
10. U.S. Food and Drug Administration. Inappropriate use of smallpox vaccine. FDA Drug Bulletin 1982;12:12.
11. Freed ER, Duma RJ, Escobar MR. Vaccinia necrosum and its relationship to impaired immunologic responsiveness. Am J Med 1972;52:411-20.
12. WHO. Smallpox vaccination certificates. Weekly Epidemiological Record 1981;39:305.
13. CDC. Smallpox vaccine no longer available for civilians—United States. MMWR 1983;32:387.
14. CDC. Smallpox vaccine available for protection of at-risk laboratory workers. MMWR 1983;32: 543.
15. CDC. Contact spread of vaccinia from a recently vaccinated marine—Louisiana. MMWR 1984;33: 37-8.
16. CDC. Contact spread of vaccinia from a National Guard vacinee—Wisconsin. MMWR 1985;34: 182-3.
17. Urdahl P, Rosland JH. Vaccinia genitalis. Tidsskr Nor Laegeforen 1982;102:1453-4.

Epidemiologic Notes and Reports

Investigation of a Smallpox Rumor — Mexico

On August 13, 1984, CDC was notified by the Infectious Disease Section, California Department of Health Services, of a possible smallpox case. The Contra Costa County (California) Health Department had received the report from a participant in a multinational seminar in Ixtapa, Mexico. On August 10, the last day of the seminar, the course's organizers had recommended that the 250 attendees consult their physicians on their return home, because a course participant had been diagnosed by a hotel doctor as having smallpox.

A seminar staff person told CDC she had understood the hotel doctor to say that, on August 9, he had diagnosed smallpox, and on August 10, he had clarified his diagnosis to "little pox," a form of chickenpox intermediate in severity between chickenpox and smallpox and not found in the United States. CDC alerted officials at the Pan American Health Organization (PAHO) headquarters in Washington, D.C. PAHO staff and Mexican health authorities investigated the rumor and determined that the hotel doctor reported he had told the seminar organizers that he had diagnosed varicella. Apparently, there was confusion in the use of Spanish terms for chickenpox and smallpox.

The patient, a woman from England, had traveled to Mexico on a flight from London via Los Angeles. Within a few days of arrival, she developed a severe clinical illness with high fever, prostration, and a vesiculo-pustular skin rash. When seen by health officials on August 15, she had recovered, and only scabbed skin lesions remained. A report received by PAHO from Mexican authorities confirmed the diagnosis of chickenpox (varicella) by electron microscopic examination of scabs. PAHO reported to the World Health Organization (WHO), Geneva, Switzerland, that the illness rumored to be smallpox was chickenpox.

Adapted from California Morbidity *(August 31, 1984) as reported by B Benda, F Wise, Contra Costa County Health Dept, R Roberto, MD, J Chin, MD, State Epidemiologist, California Dept of Health Svcs; Pan American Health Organization, Washington, D.C.; International Health Program Office, CDC.*

Editorial Note: In 1980, the World Health Assembly (resolution WHA33.4) endorsed the recommendation of the Global Commission for the Certification of Smallpox Eradication, which states: "In order to maintain public confidence in the fact of global eradication, it is important that rumors of suspected smallpox, which can be expected to occur in many countries, should be thoroughly investigated. Information should be provided to WHO, if requested, so that it can be made available to the world community."

Between 1979 and 1984, 179 reports of suspected smallpox cases were received by WHO (*1,2*). All these rumors were investigated and found not to be smallpox. The time required for national health authorities to investigate the cases varied considerably, partly in relation to the apparent seriousness of the rumors. For example, a report from Kenya caused some public concern because the patient, who died 3 days after developing a rash, had been a variolator who used material from smallpox patients to immunize others when smallpox was endemic in Kenya. Prompt investigation and laboratory analysis of specimens collected by Kenyan health officials proved within a week he had chickenpox. A report from sub-Saharan Africa required 9 months of investigation to establish that rumors of smallpox in several countries were false.

The smallpox rumor in Mexico illustrates how rumors can be generated and rapidly spread internationally. Because this case involved a pustular rash illness associated with high fever apparently diagnosed as smallpox by a physician, it was more compelling than other rumors of second- or third-hand stories of reported smallpox cases. Prompt reporting, investigation, and diagnosis of all smallpox rumors are essential to maintain confidence in global eradication.

Smallpox Rumor — Continued

References

1. WHO. Orthopox virus surveillance: post-smallpox eradication policy. Weekly Epidemiological Record 1983;58:149-56.
2. WHO Smallpox Eradication Unit. Personal communication.

Legionellosis — Staffordshire, England, and Wayne County, Michigan

The largest reported outbreak of legionellosis outside the United States occurred during April and early May 1985 in Staffordshire, England. During this period, 158 persons were hospitalized with acute respiratory infections; 36 (23%) of these cases have been fatal. To date, 60 patients have laboratory evidence of legionellosis, including 11 of the fatal cases. Patients are predominantly elderly, and most reside within an 8-10 mile area. The only common exposure noted among the 50 confirmed cases was a visit to the Outpatient Department (OPD) at the Stafford District General Hospital. A case-control study to confirm this association and to

(Continued on page 349)

TABLE I. Summary—cases of specified notifiable diseases, United States

Disease	23rd Week Ending			Cumulative, 23rd Week Ending		
	June 8, 1985	June 9, 1984	Median 1980-1984	June 8, 1985	June 9, 1984	Median 1980-1984
Acquired Immunodeficiency Syndrome (AIDS)	146	67	N	3,080	1,666	N
Aseptic meningitis	109	131	131	1,658	1,796	1,796
Encephalitis: Primary (arthropod-borne & unspec.)	17	11	19	388	352	352
Post-infectious	2	6	4	59	50	49
Gonorrhea: Civilian	16,899	14,079	17,193	347,800	349,389	411,233
Military	212	437	551	8,007	9,025	11,965
Hepatitis: Type A	453	389	389	9,308	9,123	9,834
Type B	476	481	404	10,873	10,932	9,158
Non A, Non B	49	66	N	1,774	1,666	N
Unspecified	123	93	164	2,398	2,111	3,715
Legionellosis	15	8	N	235	239	N
Leprosy	2	8	3	139	106	101
Malaria	15	10	17	318	326	413
Measles: Total*	46	83	83	1,298	1,559	1,559
Indigenous	45	65	N	979	1,395	N
Imported	1	18	N	319	164	N
Meningococcal infections: Total	31	59	62	1,290	1,518	1,528
Civilian	31	59	60	1,287	1,515	1,515
Military	-	-	-	3	3	8
Mumps	61	118	118	1,749	1,690	2,591
Pertussis	42	27	21	610	897	482
Rubella (German measles)	12	15	80	256	366	1,383
Syphilis (Primary & Secondary): Civilian	459	389	525	10,899	12,198	13,214
Military	4	7	4	82	152	166
Toxic Shock syndrome	6	11	N	166	213	N
Tuberculosis	397	472	570	8,740	9,143	11,060
Tularemia	7	11	11	46	76	74
Typhoid fever	2	6	7	120	139	164
Typhus fever, tick-borne (RMSF)	29	41	52	142	180	223
Rabies, animal	92	123	123	2,216	2,223	2,925

TABLE II. Notifiable diseases of low frequency, United States

	Cum. 1985		Cum. 1985
Anthrax	-	Leptospirosis (Mass. 1)	11
Botulism: Foodborne	3	Plague	1
Infant (Calif. 2)	20	Poliomyelitis: Total	2
Other	-	Paralytic	2
Brucellosis (Iowa 1, S. Dak. 1, S.C. 1)	48	Psittacosis (Oreg. 1, Calif. 1)	55
Cholera	-	Rabies, human	-
Congenital rubella syndrome	-	Tetanus (Fla. 1, Tex. 1)	26
Congenital syphilis, ages < 1 year	74	Trichinosis (Colo. 1, Alaska 1)	31
Diphtheria	1	Typhus fever, flea-borne (endemic, murine) (Hawaii 1)	2

*There were no cases of internationally imported measles reported for this week.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending June 8, 1985 and June 9, 1984 (23rd Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionellosis	Leprosy
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1985	1985	Cum. 1985	Cum. 1985	Cum. 1985	Cum. 1984	1985	1985	1985	1985	1985	Cum. 1985
UNITED STATES	3,080	109	388	59	347,900	349,389	453	476	49	123	15	139
NEW ENGLAND	102	5	11	-	10,441	10,068	7	36	1	4	3	3
Maine	4	-	-	-	426	390	-	-	-	-	1	-
N.H.	-	-	3	-	214	289	-	-	-	-	-	-
Vt.	-	1	-	-	124	168	-	-	-	-	-	-
Mass.	59	3	8	-	3,905	4,054	7	34	1	4	1	3
R.I.	3	1	-	-	802	649	-	2	-	-	1	-
Conn.	36	-	-	-	4,970	4,518	-	-	-	-	-	-
MID ATLANTIC	1,237	15	61	4	50,563	48,099	36	59	-	9	-	11
Upstate N.Y.	152	1	20	3	6,879	7,225	7	13	-	1	-	-
N.Y. City	819	7	3	-	23,912	20,349	-	-	-	-	-	11
N.J.	194	3	16	-	9,005	8,001	10	22	-	6	-	-
Pa.	72	4	22	1	10,767	12,523	19	24	-	2	-	-
E.N. CENTRAL	123	7	87	13	48,740	46,506	15	51	1	7	8	3
Ohio	24	3	36	4	12,264	12,082	4	17	1	2	-	2
Ind.	5	1	13	1	4,874	5,487	-	9	-	1	-	-
Ill.	56	-	10	5	13,564	9,837	2	1	-	1	-	-
Mich.	25	3	23	-	13,839	13,667	9	24	-	3	8	1
Wis.	13	-	5	3	4,199	5,453	-	-	-	-	-	-
W.N. CENTRAL	32	5	29	3	17,259	16,417	7	20	4	-	-	-
Minn.	6	1	14	1	2,441	2,404	1	1	1	-	-	-
Iowa	3	-	9	-	1,820	1,901	1	2	2	-	-	-
Mo.	17	2	-	-	8,237	7,705	4	12	1	-	-	-
N. Dak.	-	-	-	1	124	165	-	-	-	-	-	-
S. Dak.	-	1	-	-	315	449	1	4	-	-	-	-
Nebr.	2	1	1	-	1,533	1,174	-	1	-	-	-	-
Kans.	4	-	5	1	2,789	2,619	-	-	-	-	-	-
S. ATLANTIC	412	25	45	16	75,605	89,308	33	58	13	11	2	3
Del.	7	-	1	-	1,691	1,555	-	-	-	-	2	-
Md.	54	1	13	1	11,966	10,123	2	3	2	-	-	1
D.C.	57	-	-	-	6,197	6,441	-	-	-	-	-	-
Va.	27	3	11	2	7,781	8,300	1	8	-	2	-	-
W. Va.	3	-	2	-	1,067	1,064	-	-	-	-	-	-
N.C.	24	4	15	-	14,448	14,337	-	11	1	-	-	1
S.C.	4	6	3	-	9,499	8,429	1	12	2	3	-	-
Ga.	74	-	-	-	-	17,591	-	-	-	-	-	-
Fla.	162	11	-	13	22,956	21,468	29	24	8	6	-	1
E.S. CENTRAL	27	2	14	4	30,058	29,626	7	29	1	1	-	-
Ky.	10	-	4	-	3,313	3,696	1	6	-	-	-	-
Tenn.	4	-	4	-	11,867	12,329	2	10	1	1	-	-
Ala.	12	-	5	4	9,794	9,562	1	5	-	-	-	-
Miss.	1	2	1	-	5,084	4,039	3	8	-	-	-	-
W.S. CENTRAL	240	20	38	1	48,374	48,230	85	39	2	39	1	12
Ark.	2	-	1	1	4,429	4,223	-	-	-	-	-	1
La.	48	2	1	-	10,657	10,972	5	8	-	1	-	1
Okla.	5	2	11	-	4,953	5,222	7	5	1	-	-	-
Tex.	185	16	25	-	28,335	27,813	73	26	1	38	1	10
MOUNTAIN	50	10	15	3	11,134	11,172	47	42	4	9	-	3
Mont.	-	-	-	-	316	510	2	2	-	-	-	-
Idaho	-	1	-	-	377	521	2	-	-	-	-	-
Wyo.	-	-	1	-	280	341	-	1	-	-	-	-
Colo.	22	3	4	-	3,321	3,214	7	5	1	7	-	-
N. Mex.	4	4	-	-	1,307	1,268	13	6	1	-	-	-
Ariz.	17	1	2	-	3,271	3,016	10	12	2	1	-	-
Utah	4	1	6	3	468	568	-	5	-	-	-	2
Nev.	3	-	2	-	1,794	1,734	13	11	-	1	-	1
PACIFIC	857	20	88	15	55,626	49,964	216	142	23	43	1	104
Wash.	41	1	8	-	3,772	3,512	3	8	3	1	-	23
Oreg.	13	-	-	-	2,767	2,829	30	15	4	-	-	2
Calif.	785	13	78	15	46,968	41,537	182	116	16	42	1	70
Alaska	2	-	2	-	1,303	1,244	-	-	-	-	-	-
Hawaii	16	6	-	-	816	842	1	3	-	-	-	9
Guam	-	U	-	-	52	104	U	U	U	U	U	-
P.R.	34	7	3	1	1,612	1,523	5	37	-	7	-	2
V.I.	2	U	-	-	193	217	U	U	U	U	U	-
Pac. Trust Terr.	-	U	-	-	146	-	U	U	U	U	U	20

N: Not notifiable U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 8, 1985 and June 9, 1984 (23rd Week)

Reporting Area	Malaria	Measles (Rubeola)					Meningococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total									
	Cum. 1985	1985	Cum. 1985	1985	Cum. 1985	Cum. 1984	Cum. 1985	1985	Cum. 1985	1985	Cum. 1985	Cum. 1984	1985	Cum. 1985	Cum. 1984
UNITED STATES	318	45	979	1	319	1,559	1,290	61	1,749	42	610	897	12	256	366
NEW ENGLAND	19	1	16	-	85	90	63	1	34	1	33	18	1	9	16
Maine	2	-	-	-	-	-	2	1	6	-	2	-	-	-	1
N.H.	2	-	-	-	-	36	5	-	5	-	17	4	-	2	-
Vt.	-	-	-	-	-	4	11	-	2	-	2	8	-	-	-
Mass.	10	-	14	-	82	38	11	-	13	1	5	5	-	6	15
R.I.	2	-	-	-	-	-	10	-	4	-	4	1	-	-	-
Conn.	3	1	2	-	3	12	24	-	4	-	3	-	1	1	-
MID ATLANTIC	51	9	110	1	21	88	214	6	189	-	57	63	1	69	116
Upstate N.Y.	18	7	53	-	9	23	89	3	106	-	24	40	1	9	82
N.Y. City	15	-	30	-	5	55	25	-	14	-	9	3	-	40	23
N.J.	5	2	4	1§	7	6	36	1	25	-	2	5	-	8	10
Pa.	13	-	23	-	-	4	64	2	44	-	22	15	-	12	1
E.N. CENTRAL	15	-	159	-	124	555	227	15	690	-	71	245	1	20	60
Ohio	3	-	-	-	42	3	73	2	202	-	15	45	-	-	2
Ind.	1	-	-	-	1	3	34	4	29	-	11	159	-	-	2
Ill.	1	-	75	-	66	180	44	-	133	-	10	18	-	5	33
Mich.	9	-	35	-	15	369	53	9	266	-	13	12	1	14	16
Wis.	1	-	49	-	-	20	23	-	60	-	22	11	-	1	7
W.N. CENTRAL	7	-	1	-	6	3	71	2	59	7	60	77	-	16	22
Minn.	1	-	-	-	4	2	17	-	1	2	13	7	-	2	1
Iowa	1	-	-	-	-	-	7	-	7	-	3	3	-	-	-
Mo.	2	-	-	-	2	-	31	-	9	-	12	14	-	5	-
N. Dak.	1	-	-	-	-	-	2	-	2	-	6	-	-	2	3
S. Dak.	1	-	-	-	-	-	1	-	-	-	1	3	-	-	-
Nebr.	-	-	-	-	-	-	4	2	2	-	3	2	-	-	-
Kans.	1	-	1	-	-	1	9	-	38	5	22	48	-	7	18
S. ATLANTIC	41	17	164	-	6	27	241	3	136	-	114	65	3	31	20
Del.	-	-	-	-	-	-	5	-	1	-	-	-	-	-	-
Md.	10	7	23	-	4	9	29	-	18	-	30	6	-	1	1
D.C.	3	-	-	-	1	5	6	-	-	-	-	-	-	-	-
Va.	9	2	18	-	1	2	32	-	21	-	3	8	-	1	-
W. Va.	1	8	32	-	-	-	5	3	46	-	-	6	-	9	-
N.C.	4	-	3	-	-	-	34	-	9	-	8	17	-	-	-
S.C.	-	-	-	-	-	-	28	-	6	-	-	2	-	2	-
Ga.	2	-	8	-	-	-	39	-	12	-	42	6	-	4	2
Fla.	12	-	80	-	-	11	63	-	23	-	31	20	3	14	17
E.S. CENTRAL	5	-	-	-	1	3	58	1	13	-	6	5	-	1	5
Ky.	1	-	-	-	-	1	4	-	1	-	1	1	-	1	1
Tenn.	-	-	-	-	-	2	20	-	10	-	1	2	-	-	-
Ala.	3	-	-	-	-	-	20	-	-	-	2	-	-	-	1
Miss.	1	-	-	-	1	-	14	1	2	-	2	2	-	-	3
W.S. CENTRAL	24	11	90	-	7	321	115	6	194	13	87	222	1	20	6
Ark.	-	-	-	-	-	-	10	-	4	-	9	10	-	1	3
La.	-	-	10	-	-	-	18	-	2	-	5	3	-	-	-
Okla.	1	-	-	-	-	5	24	N	N	-	60	200	-	1	-
Tex.	23	11	80	-	7	316	63	6	188	13	13	9	1	18	3
MOUNTAIN	17	4	347	-	44	124	63	10	178	2	34	61	-	4	11
Mont.	-	1	124	-	17	-	4	1	7	-	3	17	-	-	-
Idaho	1	3	68	-	20	9	2	-	5	-	-	2	-	1	1
Wyo.	-	-	-	-	-	-	5	-	2	-	-	3	-	-	2
Colo.	5	-	-	-	6	-	17	-	15	-	10	21	-	-	2
N. Mex.	6	-	1	-	1	88	8	N	N	-	4	5	-	2	-
Ariz.	3	-	154	-	-	-	18	5	84	-	9	8	-	1	-
Utah	1	-	-	-	-	27	7	3	5	2	8	3	-	-	6
Nev.	1	-	-	-	-	-	2	1	60	-	-	2	-	-	-
PACIFIC	139	3	92	-	25	348	238	17	256	19	148	141	5	86	110
Wash.	11	-	1	-	-	90	39	3	17	4	24	19	-	2	1
Oreg.	7	-	3	-	-	-	24	N	N	-	16	9	-	2	-
Calif.	104	2	79	-	21	249	167	13	227	15	102	49	4	53	107
Alaska	2	-	-	-	-	-	5	1	3	-	3	-	-	1	-
Hawaii	15	1	9	-	4	9	3	-	9	-	3	64	1	28	2
Guam	-	U	10	U	-	86	-	U	4	U	-	-	U	1	4
P.R.	-	-	46	-	-	1	8	11	94	1	3	-	-	19	5
V.I.	-	U	4	U	6	-	-	U	3	U	-	-	U	-	-
Pac. Trust Terr.	-	U	-	U	-	-	-	U	3	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 8, 1985 and June 9, 1984 (23rd Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic-shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1985	Cum. 1984	1985	Cum. 1985	Cum. 1984	Cum. 1985	Cum. 1985	Cum. 1985	Cum. 1985
UNITED STATES	10,899	12,198	6	8,740	9,143	46	120	142	2,216
NEW ENGLAND	236	247	1	293	260	-	6	1	8
Maine	7	2	1	21	12	-	-	-	-
N.H.	5	2	-	7	17	-	-	-	-
Vt.	1	1	-	4	3	-	-	-	-
Mass.	123	149	-	184	141	-	5	1	5
R.I.	7	8	-	21	23	-	-	-	-
Conn.	93	85	-	56	64	-	1	-	3
MID ATLANTIC	1,498	1,703	-	1,619	1,644	1	16	-	169
Upstate N.Y.	109	144	-	266	252	-	6	-	41
N.Y. City	920	1,040	-	814	685	1	4	-	-
N.J.	317	307	-	192	356	-	5	-	8
Pa.	152	212	-	347	351	-	1	-	120
E.N. CENTRAL	517	560	1	1,102	1,189	-	11	14	62
Ohio	64	116	-	197	246	-	3	13	12
Ind.	50	64	-	134	128	-	3	-	7
Ill.	267	154	-	480	486	-	1	-	13
Mich.	110	188	1	233	256	-	3	1	5
Wis.	26	38	-	58	73	-	1	-	25
W.N. CENTRAL	110	206	-	229	262	16	3	10	406
Minn.	26	58	-	41	43	1	3	-	70
Iowa	14	10	-	34	33	-	-	-	82
Mo.	48	110	-	106	120	12	-	1	20
N. Dak.	1	4	-	2	7	-	-	1	50
S. Dak.	4	-	-	13	11	2	-	-	134
Nebr.	5	8	-	10	16	1	-	1	21
Kans.	12	16	-	23	32	-	-	7	29
S. ATLANTIC	2,697	3,661	1	1,801	1,920	5	12	58	598
Del.	17	10	-	16	24	1	-	-	-
Md.	168	244	-	165	216	-	2	6	299
D.C.	161	139	-	78	65	-	-	-	-
Va.	136	190	-	145	180	-	2	3	79
W. Va.	4	11	1	46	68	-	-	1	13
N.C.	292	361	-	225	290	4	1	27	3
S.C.	347	342	-	208	238	-	-	18	34
Ga.	-	639	-	296	261	-	-	2	88
Fla.	1,572	1,725	-	622	578	-	7	1	82
E.S. CENTRAL	971	734	-	787	866	3	3	12	108
Ky.	33	50	-	150	190	-	1	-	15
Tenn.	265	204	-	248	271	3	-	5	23
Ala.	297	267	-	258	262	-	2	4	68
Miss.	376	213	-	131	143	-	-	3	2
W.S. CENTRAL	2,725	2,884	1	911	1,014	11	6	41	451
Ark.	132	85	-	101	111	2	-	7	68
La.	464	548	-	147	135	-	-	-	9
Okla.	82	77	-	120	107	7	-	29	57
Tex.	2,047	2,174	1	543	661	2	6	5	317
MOUNTAIN	333	286	1	223	226	8	5	5	181
Mont.	2	1	-	29	11	2	-	2	95
Idaho	3	12	-	11	13	-	-	1	-
Wyo.	4	4	-	5	-	-	-	2	11
Colo.	77	63	1	29	25	1	4	-	3
N. Mex.	45	37	-	41	45	2	1	-	2
Ariz.	181	119	-	96	101	1	-	-	69
Utah	3	9	-	6	16	2	-	-	-
Nev.	18	41	-	6	15	-	-	-	1
PACIFIC	1,812	1,917	1	1,775	1,762	2	58	1	233
Wash.	51	64	-	97	89	-	-	-	1
Oreg.	41	59	-	66	70	1	-	-	1
Calif.	1,682	1,758	1	1,482	1,481	1	56	1	231
Alaska	1	3	-	51	28	-	-	-	-
Hawaii	37	35	-	79	94	-	2	-	-
Guam	2	-	U	12	23	-	-	-	-
P.R.	373	389	-	143	195	-	1	-	15
V.I.	1	6	U	1	3	-	-	-	-
Pac. Trust Terr.	13	-	U	16	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending June 8, 1985 (23rd Week)

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	676	459	134	36	17	30	49
Boston, Mass.	167	110	33	7	4	13	22
Bridgeport, Conn.	44	34	2	5	2	1	3
Cambridge, Mass.	28	17	10	1	-	-	1
Fall River, Mass.	35	28	5	2	-	-	-
Hartford, Conn.	63	37	15	2	4	5	2
Lowell, Mass.	28	20	5	3	-	-	2
Lynn, Mass.	24	18	5	1	-	-	1
New Bedford, Mass.	26	16	5	3	1	1	-
New Haven, Conn.	41	26	9	4	1	1	5
Providence, R.I.	61	48	8	1	-	4	3
Somerville, Mass.	2	2	-	-	-	-	-
Springfield, Mass.	54	33	15	2	2	2	5
Waterbury, Conn.	37	24	10	3	-	-	2
Worcester, Mass.	66	46	12	2	3	3	3
MID ATLANTIC	2,765	1,798	612	212	67	76	119
Albany, N.Y.	44	27	9	4	1	3	1
Allentown, Pa.	22	18	3	1	-	-	-
Buffalo, N.Y.	132	81	35	7	4	5	14
Camden, N.J.	45	29	11	2	2	1	-
Elizabeth, N.J.	31	21	7	2	1	-	-
Erie, Pa.†	51	33	10	3	2	3	3
Jersey City, N.J.	42	19	14	8	-	1	-
N.Y. City, N.Y.	1,324	841	287	134	35	27	58
Newark, N.J.	68	36	18	9	2	3	1
Paterson, N.J. §	27	24	-	1	1	1	1
Philadelphia, Pa.	509	336	119	19	11	24	21
Pittsburgh, Pa.†	55	39	10	1	2	3	1
Reading, Pa.	33	26	6	-	1	-	2
Rochester, N.Y.	113	83	25	3	1	1	6
Schenectady, N.Y.	34	26	7	1	-	-	3
Scranton, Pa.†	43	30	10	2	1	-	2
Syracuse, N.Y.	106	67	26	7	3	3	2
Trenton, N.J.	40	27	8	5	-	-	-
Utica, N.Y.	18	16	2	-	-	-	1
Yonkers, N.Y.	28	19	5	3	-	1	3
E.N. CENTRAL	2,285	1,581	406	131	74	92	90
Akron, Ohio	72	44	17	4	4	3	1
Canton, Ohio	41	24	13	2	2	-	3
Chicago, Ill.§	553	462	11	28	16	37	16
Cincinnati, Ohio	165	109	32	11	6	7	15
Cleveland, Ohio	167	96	40	15	6	10	6
Columbus, Ohio	126	72	37	5	6	6	7
Dayton, Ohio	102	67	23	3	4	5	1
Detroit, Mich.	268	152	68	28	11	9	9
Evansville, Ind.	55	40	8	3	-	4	3
Fort Wayne, Ind.	57	32	20	3	2	-	1
Gary, Ind.	25	13	7	3	2	-	1
Grand Rapids, Mich.	50	39	9	1	-	1	5
Indianapolis, Ind.	131	81	33	8	3	6	3
Madison, Wis.	44	30	5	4	5	-	5
Milwaukee, Wis.	134	95	31	4	3	1	4
Peoria, Ill.	25	23	1	1	-	-	2
Rockford, Ill.	52	46	5	-	1	-	2
South Bend, Ind.	46	34	8	3	-	1	1
Toledo, Ohio	107	74	28	4	2	1	4
Youngstown, Ohio	65	48	12	3	1	1	1
W.N. CENTRAL	755	499	156	52	26	22	33
Des Moines, Iowa	106	62	33	5	4	2	6
Duluth, Minn.	23	14	8	-	-	1	1
Kansas City, Kans.	26	16	7	2	-	1	1
Kansas City, Mo.	102	77	19	3	-	3	5
Lincoln, Nebr.	45	30	6	4	3	2	5
Minneapolis, Minn.	90	53	19	9	6	3	2
Omaha, Nebr.	86	57	15	10	2	2	7
St. Louis, Mo.	139	96	24	11	4	4	3
St. Paul, Minn.	74	51	13	3	4	3	2
Wichita, Kans.	64	43	12	5	3	1	1

Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1	
S. ATLANTIC	1,230	720	308	116	44	44	46
Atlanta, Ga.	157	90	40	16	6	5	4
Baltimore, Md.	141	76	37	16	9	3	1
Charlotte, N.C.	66	41	17	2	3	3	5
Jacksonville, Fla.	121	69	35	10	2	5	9
Miami, Fla.	80	32	29	14	4	1	1
Norfolk, Va.	52	30	12	3	3	4	1
Richmond, Va.	83	57	18	5	2	1	6
Savannah, Ga.	62	41	18	3	-	-	7
St. Petersburg, Fla.	115	99	9	5	2	-	6
Tampa, Fla.	67	42	17	3	3	2	1
Washington, D.C.	253	122	66	35	10	20	5
Wilmington, Del.	33	21	8	4	-	-	-
E.S. CENTRAL	750	461	181	53	25	29	38
Birmingham, Ala.	110	65	29	5	5	6	-
Chattanooga, Tenn.	62	44	16	1	-	1	4
Knoxville, Tenn.	64	37	20	5	1	1	-
Louisville, Ky.	98	65	25	3	2	3	6
Memphis, Tenn.	229	139	47	22	8	13	19
Mobile, Ala.	15	9	2	1	3	-	2
Montgomery, Ala.	55	33	14	4	1	3	2
Nashville, Tenn.	117	69	28	12	6	2	5
W.S. CENTRAL	1,281	769	295	113	52	52	43
Austin, Tex.	51	29	13	4	4	1	2
Baton Rouge, La.	45	26	16	2	1	-	-
Corpus Christi, Tex.	56	29	16	6	4	1	-
Dallas, Tex.	212	109	51	25	9	18	8
El Paso, Tex.	77	43	21	6	4	3	4
Fort Worth, Tex.	95	63	19	6	3	4	7
Houston, Tex.	241	145	58	15	6	7	4
Little Rock, Ark.	64	41	10	7	2	4	6
New Orleans, La.	155	98	35	11	7	4	-
San Antonio, Tex.	158	89	42	17	4	6	7
Shreveport, La.	30	24	4	1	1	-	3
Tulsa, Okla.	97	73	10	3	7	4	2
MOUNTAIN	632	367	139	48	29	48	22
Albuquerque, N.Mex.	74	41	18	7	6	1	6
Colo. Springs, Colo.	37	21	10	4	-	2	2
Denver, Colo.	123	63	26	6	3	25	2
Las Vegas, Nev.	82	47	19	8	6	2	6
Ogden, Utah	22	16	3	1	1	1	1
Phoenix, Ariz.	124	70	33	11	5	5	-
Pueblo, Colo.	15	10	5	-	-	-	-
Salt Lake City, Utah	47	23	7	4	6	7	1
Tucson, Ariz.	108	76	18	7	2	5	4
PACIFIC	1,916	1,250	383	156	80	80	97
Berkeley, Calif.	17	11	4	1	-	1	-
Fresno, Calif.	43	31	7	2	1	2	2
Glendale, Calif.	31	26	4	1	-	-	2
Honolulu, Hawaii	56	33	13	5	2	3	7
Long Beach, Calif.	72	49	9	6	1	7	5
Los Angeles, Calif.	554	364	101	58	18	8	17
Oakland, Calif.	67	42	10	4	6	5	3
Pasadena, Calif.	29	18	8	3	-	-	1
Portland, Oreg.	158	111	28	8	6	5	6
Sacramento, Calif.	137	89	34	4	3	7	12
San Diego, Calif.	161	110	27	11	8	5	20
San Francisco, Calif.	154	84	42	20	2	6	3
San Jose, Calif.	156	92	46	11	4	3	7
Seattle, Wash.	135	93	20	9	6	7	3
Spokane, Wash.	63	40	15	5	1	2	5
Tacoma, Wash.	83	57	15	8	2	1	4
TOTAL	12,290††	7,904	2,612	917	395	453	537

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fatal deaths are not included.

** Pneumonia and influenza.

† Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

Legionellosis – Continued

define specific exposures within the OPD is under way. Most visits to the OPD occurred in the week following Easter vacation. The OPD was not open during the vacation period, and the water supply was not circulating at that time. Samples from the potable water system have been negative for *Legionella* to date. There is also a cooling tower from the air conditioning system in the vicinity of the OPD, and *L. pneumophila* serogroup 1 has been isolated from water samples. The cooling tower and the potable water system have been chlorinated, and the potable hot water system temperature has also been increased. No further cases have occurred.

An outbreak of legionellosis also occurred in Michigan during early May. Fourteen cases of pneumonia with high fever have been identified in the approximately 380 persons who attended a church banquet at a hotel on April 27; three (21%) of these cases have been fatal. To date, seven cases have laboratory evidence of legionellosis, including all the fatal cases. No common exposures other than attending the banquet have been identified. Samples of the hotel's potable water, a nearby swimming pool and whirlpool, and the 12 functioning heat and ventilation air conditioning units have been obtained. Washings obtained from the external surface of the cooling coils of both air conditioning units supplying the banquet hall have grown *L. pneumophila* serogroup 1. Passive surveillance of the over 800 persons attending 12 other banquets held at the hotel between April 25 and May 10 has identified only one suspected case with pneumonia. No recent cases have been identified.

Reported by The Communicable Disease Surveillance Center, London, England; KA Tait, MPH, DW Lawrenchuk, MD, V Vangieson, DVM, Wayne County Health Dept, Michigan, WN Hall, MD, KR Wilcox, Jr, MD, Michigan Department of Public Health; Respiratory and Special Pathogens Epidemiology Br, Div of Bacterial Diseases, Center for Infectious Diseases, CDC.

Editorial Note: Legionnaires' disease occurs in epidemic and sporadic forms. Sporadic cases outnumber the epidemic cases; an estimated 25,000-50,000 cases of sporadic legionellosis occur in the United States each year (*1*). Despite this, the occurrence of large outbreaks, such as that in Staffordshire, underlines the continuing public health hazard of epidemic legionellosis. During outbreaks, attack rates tend to be highest in specific high-risk groups, including the elderly, smokers, and immunocompromised persons.

Epidemic legionellosis usually results from exposure of susceptible individuals to an aerosol generated by an environmental source of water contaminated with *Legionella*. In previous outbreaks, disease has been associated with exposure to evaporative condensers, cooling towers, showers, whirlpools, and respiratory therapy equipment (*2-6*). A specific source has not yet been epidemiologically implicated in either of these recent outbreaks. Recovery of *Legionella* from an environmental site does not by itself constitute proof of the source of the outbreak because *Legionella* is frequently isolated from water sources unrelated to outbreaks of human disease. Additional efforts must be made to find an association between exposure to a given potential source of the organism and occurrence of the disease, including appropriate epidemiologic studies, specific sub-typing of *Legionella* isolates, and identification of a mechanism of aerosol generation that could allow transmission to occur (*7*). Further epidemiologic and laboratory investigation of potential environmental sources is currently under way in both outbreaks.

Routine testing of potable water systems or cooling towers for *L. pneumophila* is of questionable value and, therefore, has not been recommended, since the organism is ubiquitous, and the significance of a positive culture in the absence of associated illness cannot be defined. In addition, routine decontamination of potable water systems or cooling towers specifically directed at *Legionella* is not without hazard. Routine treatment with biocides active against *Legionella* does not necessarily eradicate the organism (*8*). Studies are under way to

Legionellosis — Continued

determine the settings in which *Legionella* causes human disease and to evaluate effective control measures.

References

1. Foy HM, Broome CV, Hayes PS, Allan I, Cooney MK, Tobe R. Legionnaires' disease in a prepaid medical-care group in Seattle 1963-75. Lancet 1979;I:767-70.
2. Dondero TJ, Rendtorff RC, Mallison GF, et al. An outbreak of Legionnaires' disease associated with a contaminated air-conditioning cooling tower. N Engl J Med 1980;302:365-70.
3. Spitalny KC, Vogt R, Witherell L, et al. Legionnaires' disease and Pontiac fever associated with a whirlpool. Miami Beach, Florida: 22nd Interscience Conference on Antimicrobial Agents and Chemotherapy, 1982 (abstract #87).
4. Shands KN, Ho JL, Gorman GW, et al. Potable water as a source of Legionnaires' disease. Clin Res 1981;29 (abstract #260A).
5. Jones E, Checko P, Dalton A, et al. Nosocomial Legionnaires disease associated with exposure to respiratory therapy equipment, Connecticut. In: *Legionella*. Thornsberry C, Balows A, Feeley JC, Jakubowski W, eds. Washington D.C.: ASM, 1984:225-7.
6. Cordes LG, Wiesenthal AM, Gorman GW, et al. Isolation of *Legionella pneumophila* from hospital shower heads. Ann Intern Med 1981;94:195-7.
7. Broome CV. Epidemiologic assessment of methods of transmission of legionellosis. Zbl Bakt Hyg, I. Abt. Orig. A 1983;255:52-7.
8. Fliermans CB, Harvey RS. Effectiveness of 1-Bromo-3-Chloro-5, 5-Dimethylhydantoin against *Legionella pneumophila* in a cooling tower. Applied Environ Microbiology. 1984;47:1307-10.

Observations of Reproductive Functions among Workers in an Oil Refinery — Louisiana

In 1981, male employees in the wastewater treatment plant of an oil refinery in Louisiana expressed concern about an apparent excessive rate of spontaneous abortions among their wives. By means of a questionnaire, consultants to the company studied the results of pregnancies among wives of the male workers (*1*). The reported rate (17%) of spontaneous abortions during the period the husbands were employed at the plant (from 1976, when the plant opened, to 1981) was over twice the rate (8%) for the period before the husbands began working at the plant (1934-1976) ($p = 0.07$).

Because of methodologic limitations of the study and continuing concern among the workers, union representatives of workers at the plant requested an investigation by the National Institute for Occupational Safety and Health (NIOSH). In 1982, NIOSH investigators conducted a cross-sectional evaluation of male reproductive functions among the workers. Observations of sperm morphology and tests for sperm concentration were made on the semen of 42 of the 62 male employees in the plant who had not had vasectomies or other known causes of infertility (*2,3*). For comparison, 74 persons working in other areas of the refinery or in administrative positions not at the same site were similarly examined.

Adjusting the data for differing periods of sexual abstinence, the mean sperm concentrations for the control group (79.9 million spermatozoa/cc of semen) did not differ significantly from that (68.2 million/cc) of the workers at the wastewater treatment plant ($p = 0.16$). The observed proportions of sperm with abnormal morphology for the test group (49%) and the comparison group (45%) were also similar.

Using a stepwise regression model, investigators also explored the relationship between sperm concentration and the number of hours worked in the plant during the previous 6 months. The duration of sexual abstinence before sample collection was most closely correlated with sperm concentration, while the number of hours worked correlated poorly with

Reproductive Functions – Continued

sperm concentration (p = 0.22). Sperm concentration was not significantly correlated with age, history of urologic abnormality, recent fever or illness, smoking, use of alcohol, marijuana, and other drugs, or frequent sauna or baths. Moreover, none of these factors was significantly associated with observed abnormalities in sperm morphology.

Reported by Reproductive Health Activity, Industrywide Studies Br, Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Since azoospermia (absence of motile spermatozoa in the semen) and oligospermia (deficiency of spermatozoa in the semen) were noted in 1977 among chemical workers exposed to dibromochloropropane (DBCP), the effect of occupational exposures on semen has received increasing attention as an index of occupationally impaired reproductive function. The degree of reproductive risk that may be inferred from observed changes in sperm involves several links. First, recent evidence from human studies confirms earlier results from animal studies that certain exposures of males can increase the chance of spontaneous abortion in their mates, independent of female reproductive factors (*4*). Second, increases in abnormally shaped spermatozoa and decreases in the concentration of spermatozoa in the semen have been associated with infertility (*5,6*) and, to some extent, with a greater frequency of spontaneous fetal loss in the mates (*7,8*). Finally, research in animals and humans suggests that the concentration and morphology of spermatozoa may be sensitive indicators of impaired spermatogenesis and testicular function (*9*).

The findings presented here indicate a lack of effect of occupational exposures on the concentration and morphology of spermatozoa among workers at the time of study. Several factors must be considered in viewing these results in light of those of the earlier questionnaire survey. A comparison of rates of spontaneous abortion for 1976-1981 with those in 1934-1976 may involve a recall bias that could reduce the reliability of the findings. In addition, the questionnaire survey involved a small population with a necessarily small expectation of spontaneous abortions, which increases the possible influence of random fluctuations in a biologic event.

If, however, it is assumed that the results of the questionnaire accurately reflected the situation at that time, there are scientifically credible explanations for an observed increase in the rate of spontaneous abortions, such as: (1) genetic defects may have been present in the spermatozoa of some workers, leading to fertilizations by abnormal spermatozoa and subsequent fetal loss; (2) a significant toxic exposure may have been present in the past, but the effects were not detectable during the period of the NIOSH study; (3) spermatic abnormalities capable of producing fetal loss may have been present but not detectable by the methods used by NIOSH; and (4) embryotoxic substances on fomites, such as contaminated clothing or skin of the workers, may have been transmitted to the wives and led to fetal loss after normal fertilization.

References

1. Morgan RW, Kheifets L, Obrinsky DL, Whorton MD, Foliart DE. Fetal loss and work in a waste water treatment plant. J Amer Public Health 1984;74:499-501.
2. National Institute for Occupational Safety and Health. Health hazard evaluation report. Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1983. (HETA 82-387-1392).
3. Rosenberg MJ, Wyrobek AJ, Ratcliffe J, et al. Sperm as an indicator of reproductive risks among petroleum refinery workers. Br J Ind Med 1985;42:123-7.
4. Hemminki K, Kyyronen P, Niemi M-L, et al. Spontaneous abortions in an industrialized community in Finland. Am J Public Health 1983;73:32-7.
5. Spira A, Mayauz MJ, Schwartz D, Jouannet P, Czyglik F, David G. Quelques aspects methodologiques d'une enquete retrospective comparant 484 hommes feconds et 2,768 hommes infeconds. Rev Epidem et Sante Publ 1980;28:13-20.

Reproductive Functions – Continued

6. Aitken RJ, Best FS, Richardson DW, et al. An analysis of sperm function in cases of unexplained infertility: conventional criteria, movement characteristics, and fertilizing capacity. Fertil Steril 1982;38: 212-21.
7. Czeizel E, Hancsok M, Viczian M. A habituálisan vetélő asszonyok férjeinél végzett ondóvizsgálat jelentősége. Orv Hetil 1967;108:1591-5.
8. Furuhjelm M, Jonson B, Lagergren CG. The quality of human semen in spontaneous abortion. Int J Fertil 1962;7:17-21.
9. Wyrobek AJ, Gordon LA, Burkhart JG, et al. An evaluation of human sperm as indicators of chemically induced alterations of spermatogenic function: a report of the U.S. Environmental Protection Agency Gene-Tox Program. Mutat Res 1983;115:73-148.

Reported Measles Cases — United States, Past 4 Weeks

The following states have reported measles during the past 4 weeks: Arizona, California, Colorado, Connecticut, Hawaii, Idaho, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Montana, New Jersey, upstate New York, North Carolina, Pennsylvania, Texas, Virginia, and West Virginia; New York City has also reported measles.

The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

Director, Centers for Disease Control
James O. Mason, M.D., Dr.P.H.
Director, Epidemiology Program Office
Carl W. Tyler, Jr., M.D.

Editor
Michael B. Gregg, M.D.
Assistant Editor
Karen L. Foster, M.A.

☆U.S. Government Printing Office: 1985-746-149/10057 Region IV

**DEPARTMENT OF
HEALTH & HUMAN SERVICES**
Public Health Service
Centers for Disease Control
Atlanta GA 30333

Official Business
Penalty for Private Use $300

U.S. MAIL

Postage and Fees Paid
U.S. Dept. of H.H.S.
HHS 396

A 48106 48106 8446 9 X
SERIALS ACQUISITION DEPT
UNIVERSITY MICROFILMS
300 NORTH ZEEB ROAD
ANN ARBOR, MI 48106

HHS Publication No. (C

...g material is illegal.